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ABSTRACT

The Purdue University School of Pharmacy and Pharmacal Sciences initiated a Certificate Program in Self-Care for Pharmacy Practice. The program aimed to enable pharmacists to develop their practice to better serve the self-care needs of customers. In a pilot group 26 participating pharmacists took a sequence of home study modules and workshops bracketed by introductory and closing workshops focusing on major issues and strategies in self-care consulting. Using a model of knowledge, skills and application, the eight therapeutic home study modules employed videotapes and print materials to emphasize disease or condition information pharmacists should know to advise or instruct customers. Workshops developed skills of pharmacists to ascertain information, instruct and advise patients about their condition, or refer them to another provider. Pharmacists also learned how to address other topics to allow them to independently develop new areas after the certificate program. Throughout the program participants were evaluated on knowledge and skill acquisition, attitudes toward the program, organization, techniques and intensity. Later the Indiana Pharmacists Association helped participants prepare for the certification process. Twenty-five of the participants completed the program, spent about 125 hours over 14 months on the program, and rated it highly. An executive summary is included with the final report. Appendixes contain five tables and comments for the funding staff. (JB)

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ED 360 884

CERTIFICATE PROGRAM IN SELF-CARE FOR PHARMACY PRACTICE

Grantee Organization:

Purdue University
School of Pharmacy and Pharmacal Sciences
Pharmacy Practice Department
West Lafayette, Indiana 47907

Grant No.

G008642190

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Project Codirectors:

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SUMMARY

A Certificate Program in Self Care for Pharmacy Practice was initiated for pharmacists. They participated in a sequence of homestudy modules and workshops bracketed by introductory and closing workshops focusing on major issues and strategies in self care consulting for pharmacists. Using a model of knowledge, skills and application, the eight therapeutic homestudy modules employed videotapes and print materials to emphasize disease/condition information pharmacists should know to advise or instruct customers. Workshops developed skills of pharmacists to ascertain information, instruct and advise patients about their disease/condition, or refer them to an appropriate health care provider. Pharmacists learned a strategy for addressing other topics in self care information to allow them to independently develop new areas after the certificate program was complete. Participants were prepared to pursue professional certification through the cooperating state pharmaceutical organization after completion of the university-based program. The highly rated program took about 125 hours for each participant over 14 months.

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Certificate Program in Self-Care for Pharmacy Practice

EXECUTIVE SUMMARY: CERTIFICATE PROGRAM IN SELF-CARE FOR PHARMACY PRACTICE

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A. PROJECT OVERVIEW

A certificate program on self-care consulting was developed for pharmacy practice and tested on a pilot group of 26 practicing pharmacists. Pharmacists studied a model for self-care consulting, completed eight therapeutic disease/ condition modules by self-study using print materials and developed videotapes, and acquired skills in counseling, assessing patient conditions and instructing patients in the disease or condition content areas over a 14 month program. A total of 25 pharmacists completed the pilot project having successfully demonstrated completion of each module and application of the information to practice. The overwhelming endorsement of the program by the pilot participants led to the further offering of this particular program, the initiation of efforts to create a multistate study with the cooperation of state and national pharmacy organizations and universities, and the development of additional certificate program pilot projects in other pharmacy practice areas.

B. PURPOSE

Development of curricular-based continuing education opportunities in an organized, systematic format to enable pharmacists to develop their practice to better serve the self care needs of customers was the originating thought prompting development of the project proposal. Pharmacy education and practice have changed in the last 20 years increasing the need for pharmacists to counsel and gather information to best help clients with self-care needs. The particular focus on self-care consulting by community pharmacists as the target program for initiation on some theoretical base was prompted by identification of the topic in the professional literature by both professional practice and academic groups and the potential impact on the public. It was also thought appropriate to develop a theoretical basis for the development of certificate programs, because previous forays into the area by other schools or organizations lacked a consistent conceptual framework for development of a program and a lack of application of the studied material to their practice. The developmental expense for such programs is significant and requires considerable personnel time.

C. BACKGROUND AND ORIGINS

Recognized need for continued development of pharmacists after baccalaureate graduation and a goal to advance pharmacy practice

prompted initiation of efforts to further develop the concept of certificate programs for pharmacy practice. The effort was supported by the university and particularly the school and the Pharmacy Practice Department because the goals of the Department and School incorporated the practice development concept as a major area of focus. In addition, the focus on certificate programs as alternative type of curricular-based continuing education added to the school's pioneering work with a nontraditional approach to an advanced professional degree using distance learning techniques and strategies. The School of Pharmacy had developed its own telecommunications center which facilitated commercial grade video productions and distribution, further aiding in program development. Graduate student assignment to the project facilitated development because of the particular background and talents of the student, Linda G. Suveges. The project was also aided by the cooperation of the Indiana Pharmacists Association who helped promote the pilot project to its membership, became the certifying professional organization, and will help additional development of the program within Indiana.

D. PROJECT DESCRIPTION

A group of 26 pharmacists was recruited from participants in a statewide meeting of the Indiana Pharmacists Association in Spring, 1986. The program for which these pharmacists volunteered was described as combining self-paced homestudy and live workshops focusing on the concept of Self Care consulting to facilitate pharmacists knowledge and skill development to best help their clients. The investigators in this project developed the print materials, videotapes and workshop materials. During the next 14 months the pilot group participated in: 1) an opening workshop detailing the principles and focus of the content; 2) eight disease/condition-oriented self study modules with accompanying half-day regional workshops; and 3) a final workshop which reviewed participant performance, evaluated knowledge, skills and plans for implementation. Throughout the program participants were evaluated on knowledge and skill acquisition, attitudes toward the program content, organization, techniques and intensity. Upon completion of the didactic portion of the program, participants were aided in preparing for the certification process conducted by the Indiana Pharmacists Association.

E. PROJECT RESULTS

The strategy of teaching the participants a process of patient assessment and communications using therapeutic topics and real practice situations was well received by the participants. The overall rating for the program was high. The pharmacists particularly liked homestudy video and print materials together, but did not rate as high the modules (2) which used only print materials. The pharmacists rated all the workshops very high, recognizing that the material was directly applicable to practice and would help them

in their practice. Overall the program received very high ratings by the participants.

Among other results are the adoption of the knowledge-skills-application formula to the development of other certificate programs developed at the school. In addition, other pharmacy schools are interested in participating in this format, using these materials and conducting the same process.

On a national scope, the rapid development of other "certificate" programs has created the need for national guidelines describing components of quality certificate programs. The model and the definitions used in this project are being used as the basis for initial composition of proposed guidelines for certificate program providers to acquire certification by a national accrediting body as a provider of such programs.

Initial results of this project have been shared at meetings of the Indiana Pharmacists Association, the American Association of Colleges of Pharmacy, the Canadian Association of Colleges of Pharmacy, and with key officers of the American Pharmaceutical Association. Publications of the results of these data are under development and will be submitted to professional journals. Additional dissemination of these results were stymied because the proposal for a dissemination grant was rejected.

F. SUMMARY AND CONCLUSIONS

The proposed model for certificate program formulation (knowledge, skills and application) was successful in this pilot project for A Self Care Certificate Program for Pharmacy Practice as measured by 1) pharmacist acquisition of knowledge, 2) attitude toward the learning techniques of independent study by print and videotape and associated workshops, and 3) demonstration of acquired skills. The recommendations for use of videotapes for all modules and shortening of module study time to one month intervals made by participants were minor adjustments suggested by participants in final evaluations. The acceptance of the format used led us to: 1) continue use of the model proposed; 2) promote the program to other pharmacists; 3) apply the model to development of certificate programs for other pharmacy practice environments (long term care consulting and drug therapy monitoring); 4) work on development of a multicenter (multistate) project with national and state organizations and other universities; and 5) increase staff commitments to certificate programs in the Department of Pharmacy Practice. Research in certificate program development, implementation and evaluation will continue in this school and at others in the United States.

FINAL REPORT: CERTIFICATE PROGRAM IN SELF CARE FOR PHARMACY PRACTICE

A. PROJECT OVERVIEW

A project was designed by the investigators in the Self Care content area using advice from previous project results, representatives from the state pharmaceutical associations of Indiana and national pharmacy organization leadership in both professional practice and academic pharmacy. Recruitment of 26 pharmacists after presentation at one meeting of the Indiana Pharmacists Association and announcement in subsequent association newsletters was accomplished.

B. PURPOSE

The primary purpose of the project was to develop a curricular educational experience designed to meet the needs of pharmacists involved in the provision of consultation services to help consumers with their self-care needs. A secondary goal was to have the program serve as a prototype for certificate programs in other areas of pharmacy practice.

Specific objectives of the project were to:

1. develop a certificate program in self-care consultation for pharmacy practice in conjunction with the Indiana Pharmacists Association,

2. implement the certificate program in self-care with a pilot group of Indiana pharmacists,

3. evaluate and refine the certificate program in self-care prior to implementation on a larger scale to pharmacists in Indiana and other areas of North America,

4. establish guidelines for the development of other curricular-based certificate programs in pharmacy practice areas, and

5. suggest future requirements and methods to ensure continued competency in the area of self-care consultation.

In retrospect the purposes were all appropriate. Realistically, however, this project provided adequate time only to satisfactorily accomplish development and testing of the program model with a pilot group and evaluating the resources. Additional resources and time must be invested to develop more completely the future requirements and methods to ensure continued competency in the area of self-care consultation.

C. BACKGROUND AND ORIGINS

Pharmacy education has evolved in the last 20 years from exclusive focus on the drug and its dosage form to one that encompasses concern for the patient and the patient's drug therapy. Essential components of basic pharmaceutical services today include patient counseling, drug therapy monitoring, and interaction with other health professionals in addition to delivery of the appropriate product.

While pharmacists in traditional community pharmacy practice are aware of the increased demand for patient-oriented services by consumers, many feel unprepared to serve these needs in a consistent, systematic manner. Part of the reluctance of pharmacists relates to perceived competence and part to establishing patterns or habits of practice which consistently includes these elements. The challenge is to provide an opportunity for pharmacists to acquire knowledge and skills and then apply the knowledge and skills to build confidence and establish the practice habits or patterns.

Although national task forces and scholars had called for development of certificate programs in recent years, the concept had little formal definition. What were appropriate lengths and depths of information to be covered? Was there a theoretical framework which could be applicable for the development of certificate programs which would encompass the issues raised by scholars, organizations and task forces? Would pharmacists participate and find acceptable a curricular approach to continuing education which was a significant departure from traditional, episodic continuing education? Would associations of pharmacists be interested in development of the certificate program concept as a means to help pharmacists better help the customers they serve?

Purdue School of Pharmacy pioneered nontraditional pathways for advanced professional degrees for pharmacists beginning in 1978. For many practitioners this substantial alternative for continuing personal development as a primary health care provider was not in an area appropriate to their type of pharmacy practice and/or required too much sacrifice to undertake. Certificate programs had been suggested as an alternative by task forces studying pharmacy practice and personnel development. Certificate programs, identified as focused areas of study relating to segments of pharmacy practice, would enable pharmacists to develop and apply expertise to enhance their abilities and enable them to begin developing the habits and patterns to serve the patients appropriate to their practice setting.

No theoretical framework had been developed for certificate programs by prior investigators that accounted for the criteria suggested by the national task forces: quality academic standards for the development of pharmacists' knowledge and skills in the area of focus; and application of the knowledge and skills to practice.

Purdue had no experience with curricular-based certificate programs, but did have the experience of developing the nontraditional advanced

degree pathway for interested pharmacists which was still a viable program. The experience would prove extremely valuable in anticipating development of instructional materials and facilitating the use of print and videotape distance learning techniques. Policies to provide curricular learning opportunities and deal with processes and problems of programs of considerable length were important to consider.

The School of Pharmacy and the Pharmacy Practice Department were commited to the advancement of pharmacy practice in Indiana. The prominent recognition and fostering of this goal within the school also helped determine the allocation of resources to development of a certificate program. Experiences of other programs had not revealed a sustained commitment to such programs. They seemed to be related more to specific interests of individuals. At Purdue successful certificate programs were envisioned as priority areas to facilitate pharmacy practice development. A sustained commitment was planned if the method and techniques were successful.

The School of Pharmacy also had the unique resource of a commercial quality television production studio with an experienced producer/director which would facilitate the production and development of quality video tapes, a key component of the learning experience identified by the pharmacists. This resource minimized allocation of substantial resources of the project because of the ability to designate contribution of the necessary effort to accomplish project goals.

Within Indiana, pharmacy organization leaders saw the potential benefit for certificate program development and pledged their cooperation in facilitating development of the certificate program concept. National pharmacy organization leaders who also had participated in key task forces also provided their endorsement and advice.

Within the Pharmacy Practice Department were individuals with appropriate expertise and vision. The department head, Dr. Robert Chalmers, encouraged and supported the development from the outset. As a member of national task forces and study groups, Chalmers had participated in the study groups identifying the directions for pharmacy practice and pharmacy education in the coming decades. The investigators had separately unique backgrounds in pharmacy education and adult/continuing education which helped select content and educational techniques to efficiently develop the program. Doctoral student Linda Suveges also had pharmacy teaching experience in the appropriate self care areas as a pharmacy faculty member at another university (University of Saskatchewan), continuing education teaching experience and was studying instructional design which contributed to development. As the program developed an additional staff member was added to the program in preparation for ongoing management of the program after Suveges would complete her doctoral studies and return to her faculty position.

Self care was identified in national and state forums as an important

area for development because of the potential impact on the public at large.

D. PROJECT DESCRIPTION

From a group of 49 people who expressed interest in a pilot project of the Self Care Certificate Program for Pharmacy Practice a group of 28 pharmacists committed to the program and 26 people actually began the program. These pharmacists were enrolled in an academic credit course as well as receiving continuing education credit during their participation in the program. Each participant participated at a cost of $350 which covered the cost of the workshops. (This price was expected to be approximately half of the eventual market price of $700 for later participants.)

While the original proposal called for a total of 30 participants in the pilot, the 28 original commitments were considered adequate. Considerable additional expense would have had to be invested to recruit just two additional participants. The recognition of the volunteers who did commit to the program also contributed to our confidence in a high completion rate for the participants. The three pharmacists who did drop out did so because of severe family or business constraints not foreseen at registration time. All three indicated their interest in participating in a subsequent offering of the program.

The pharmacists began a 14 month program with a full day seminar at which: 1) overall program concepts were disucssed; 2) communication models and applications to self care and pharmacy practice were presented; 3) program procedures were defined; 4) participants were pretested and asked for demographic information and descriptions of their practices; 5) initial organizations of regional workshop groups were made; and 6) initial study materials were distributed.

The full curriculum included the following modules:

I. Consultation Skills (covered at the opening workshop)
II. Respiratory Conditions
III. Colds and Allergies
IV. Diabetes Mellitus
V. Diagnostic Kits and Devices
VI. Dermatologic Conditions
VII. Nutrition/Weight Loss
VIII. Gastroenterologic Conditions
IX. Hypertension

Each therapeutic module was covered using a combination of print materials from the pharmacy literature, readings from the current edition of the Handbook of Nonprescription Drugs and/or videotapes developed specifically for this program or adapted for this program from up-to-date videotapes which were part of an on-going series produced by the School of Pharmacy called "Current Topics in

Therapeutics". The final curriculum listed above is modified from the original proposal because of adjustments made using the advice and suggestions of the participants, their performance, and our own efficiency in covering the proposed material using either available printed material or video material or a combination of both. Our anticipation of significant review videotapes for some of the modules (diabetes, respiratory disorders, hypertension). On the other hand it took considerably longer to make some tapes than others because of rapid changes in available products (diagnostic kits and devices, antihypertenisves). The module on Diagnostic Kits and Devices has been updated almost monthly since it was distributed to the pharmacists.

Pharmacists studied the materials for approximately six weeks and then participated in a three hour workshop at a site convenient to their participation. Four regional workshops corresponding to the geographical distribution of the pilot project volunteers were held. This roughly corresponded to one workshop in northern (South Bend), mid-north (West Lafayette), central (Indianapolis) and southern (Vincennes/Princeton) parts of Indiana. The workshops were routinely scheduled over a two week period. If a pharmacist was unable to attend a workshop because of some conflict, participation at another of the corresponding subject workshops was required. If such participation was impossible, an individual makeup workshop at Purdue School of Pharmacy was scheduled or at another time in one of the regional workshop locations.

At each workshop a consistent procedural pattern was developed as described below:

I. Questions/concerns about the therapy/conditions discussed in the module and collection of module evaluation forms.

II. Completion of a closed-book posttest on the module

III. Discussion of the posttest

IV. Unique workshop activities appropriate for the therapeutic module; including case studies, simulations, demonstrations of and practice with equipment and devices, demonstrations of proficiency, taste or performance/identification tests,

V. Summary and evaluation of the workshop

VI. Discussion of the next assignment and distribution of study materials

Original plans called for the development of trigger videotapes to stimulate situation analysis and discussion in the workshops. However, the creation of suitable video vignettes which did not become restrictive were supplanted by written case simulations or problem statements which proved to be stimulating to group discussion and encouraged more participation and less passive watching.

The proposed schedule for providing instructional materials was ambitious and needed to be adjusted in a couple instances to handle delays of a week or two in getting videos produced, editted, reproduced and distributed. The final workshop was completed within the originally proposed guidelines, but a longer lead time before initially beginning the workshops might have been less stressful at some times for completion of videotapes. The most difficulty was faced when trying to coordinate the busy schedules of content experts into an established pilot project schedule. If the production schedule was delayed significantly, a ripple effect occurred on development of other modules. Usually there were at least three modules in different stages of development at any one time and delays then affected initiation and development of the subsequent modules. The cushion of two months over the summer of 1987 proved to be a necessary buffer to permit catchup.

Knowledge and performance objectives were specified for each module. Modules dealing with Colds and Allergies and Dermatologic Conditions did not have objectives associated with the development of any skills regarding monitoring devices, but with assessment of the patients condition. Modules dealing with Diabetes, Diagnostic Kits and Devices, Hypertension, and Respiratory Conditions focused on development of skills in using monitoring equipment and in educating consumers about such equipment and tests. The development of intellectual skills involving monitoring, evaluating, and counselling patients was expected in all modules, and objectives for those skills were included for each module.

Videotapes were developed for all instructional modules except colds and allergies and dermatological disorders. In these modules print materials were used as well as the readings in the Handbook of Nonprescription Drugs.

Participants were given or sent the modular materials. Each module included: 1) an introduction which incorporated a review of pertinent physiology and the module's objectives, 2) the study outline for the video tape or the reading materials, 3) practice tests, 4) case studies and scenarios applicable to the module, 5) additional reference materials, and 6) instructions for participants regarding completion of the the pretest and evaluation forms.

Procedures for evaluation of the learners, the instruction and program administration were developed. Tests, performance evaluations, and simulations were designed to evaluate participants. Some of these instruments functioned as formative evaluation of the program as well as summative evaluations of the learners. Participants were also asked to evaluate the instruction and program administration by completing specially designed evaluation forms. Both participants and faculty also provided verbal feedback regarding these matters.

E. RESULTS

Of the 28 original registrants, 26 actually began the program. The first two dropped out because of the family/ work strains unrelated to the program itself. A third person withdrew after participating in two madules and workshops because of business changes in his practice which created hardships and extended working hours. He was no longer able to participate, although he remained interested in the program.

Of the 25 participants 16 were male and nine female. Their mean age was 38.2 years and they practiced an average of 14.4 years. (See Appendix A, Table 1 for additional details.) Of the 25 participants 18 were in community practice, five were in hospital practice and two held other positions. A total of 11 were staff pharmacists, 12 were managers or owners and two held other positions. (See Appendix A, Table 2 for additional details.) The participants listed a variety of reasons for participating in the program. The five primary reasons identified were (percent of group in parenthesis): sounds interesting (88), looking for a challenge (64), academic credit (32), wish to expand self care consultation (80), and review of over-the-counter products (44). Although demographic characteristics of the pilot group were not compared to a control group of pharmacists from the general population, the pilot group did not appear unusual to any of the faculty familiar with Indiana practitioners.

Participants usually received the instructional materials for each module from 4 to 6 weeks prior to a workshop scheduled on the subject. In two instances, Diagnostic Kits and Devices and Gastrointestinal Disorders, delays in production related to conflicting schedules of content specialists and the need for special editing delayed delivery until three weeks before the workshops. The participants were notified of delays and found no problem with the shortened schedule. Participants completed pretests of 30 items in approximately 20 minutes. With the exception of isolated individuals in several modules, all participants failed to reach a 70% score to pass the pretests.

Participants studied largely at home as expected. Although a few had the opportunity to do some study at work in five of the eight therapeutic modules (Appendix A, Table 3). Six participants studied the Colds and Allergies module both at work and at home because it did not have a video component to it. In five other modules three or less people studied both at home and at work. All participants studied only at home for Diagnostic Kits and Devices. These data were not collected for Respiratory Conditions module. The data collected did not determine if only print materials were studied outside the home. However, the results do emphasize the flexibility of the instructional format used for independent study.

Participants reported varying lengths of time spent in independent study, and different numbers of study sessions for each module. The number of hours required for home study was greatest for the diabetes module (10.7 + 6.7 hours and least for the Diagnostics module (3.0 +

1.7 hours) These results are consistent with the quantity of materials provided with these modules: Diabetes consisted of five hours of videotapes and a large volume of print materials. Diagnostics was covered in one videotape with very few additional print materials. The large variations in both the number of study hours and sessions by the participants further confirms the flexibility of the program. The results also illustrate the learner-centered focus of the programs because the participants determined where, when and how long to study. The differences in actual study time compared to estimated study time at the beginning of the project show a general trend toward less average time per module than originally projected. However, the considerable individual variation among participants regarding study times suggests significant difference in individual needs. These figures also do not reflect individual practice or on-the-job application of newly acquired knowledge and skills. While the pilot group supplied necessary baseline information about the hours of study required for the program, these figures can only be considered preliminary. Information from participants in future offerings is required to confirm these data. These study times suggest that a range of instructional hours may be the most appropriate for the certificate program. These times also will not reflect the changes made in the materials as a result of the suggestions and constructive criticism of participants and faculty upon completion of the modules.

Workshops Attendance at workshops was excellent despite busy schedules for many of the participants. The workshops held at South Bend and Princeton/Vincennes generally involved the same participants for each module. Participation at the other two sites varied, however, depending on individual schedules of the participants. Two individuals who were unable to attend the workshop on Respiratory Conditions participated in a special session on this topic held at Purdue for them. One individual was allowed to "test-out" of a workshop on Diagnostics because of demonstration of knowledge and skills with appropriate products at a subsequent workshop. Two individuals were unable to complete the Dermatology workshop, but completed the posttest by mail and later demonstrated their expertise in both hypertension and dermatological problems at a special session. One of these individuals had moved from Indiana to Arizona, but continued to participate in the program, including returning from Arizona for the final workshop. The scheduling of workshops in several locations facilitated pharmacist participation. In the few cases where people with very busy schedules needed to attend other workshops than those they usually attended, the alternative was genuinely appreciated even though additional travel time was necessary.

It will be interesting to try two other alternatives in the near future. We will attempt to hold the program at only one site in Indianapolis for a limited number of pharmacists who are all employees of one chain pharmacy. The participants will come from a variety of locations around Indiana. A second alternative may be experimented with in the near future: holding full day workshops every two months or three months. This would decrease the number of

days pharmacists would be away from the job yet cover all the same information. Will there be sufficient benefit in the economy of time with a maintained performance level on the modules and skill acquisitions required?

Evaluations of the Learners The mean scores of pretests ranged from 55.2 for Diagnostics to 74.6 for Colds and Allergies. Except for Colds and Allergies pretest, most participants did not attain a score of 70% on any pretest. These results may be interpreted in several ways. The material for most of the modules was sufficiently new (or at least not remembered) for most of the participants and needed to be updated for inclusion into their knowledge base. Also, it may be interpreted that the material in the Cold and Allergies module was of sufficiently common knowledge that this group of pharmacists were already familiar with it. It also might be suggested that the items on the examination were easy. A standard test for examination reliability (Kuder-Richardson 20 or KR20) revealed that the lowest coefficient of reliability was on the Cold and Allergy pretest (.656). We would have liked to have had the reliability above 0.70. All other pretest reliability coefficients were above 0.70.

The ranges of scores on the pretests were wide. No single person consistently scored the highest suggesting a range of backgrounds, experience, and practice emphases among participants. Similarly, no single age group of participants represented those people who scored highest on the pretest.

Pretest results may have been affected by participants' knowledge that their performance in the program was not dependent upon their performance on the pretests. They may have been less intense about answering these questions.

Posttest mean scores ranged from 77.8 for Dermatologic Conditions to 90.3 for Respiratory Conditions. While there was an increase in scores from pretest to posttest in each module, the smallest increase in scores was for the Colds and Allergies module (6.7 percentage points). Posttest scores were significantly higher than pretest scores for all modules when Student's t-test was used for comparison. The significance was measured at $p < .001$ for a one-tailed test. Assuming that the examinations evaluated the knowledge objectives as intended, the results suggest that significant learning occurred for most participants. Three individuals failed two posttests each. Upon re-examination those indviduals passed the examination. While we wished for each individual to be successful on the first posstest, perhaps the posttest format created problems for some individuals. Although the examination was not "timed", some people may have felt pressured or distracted, and were therefore unable to perform adequately.

Posttest reliability coefficients (KR20) ranged from 0.19 to 0.88. These data show wide variability in the posttest difficulty. While the participants were successful on the examinations, the reliability of examinations for Respiratory Conditions (0.19) and Dermatology (0.40) must be examined. Perhaps some of the items on these

posttests were too easy or confusing. These examinations are being examined for revisions for the next offering.

When examination results were compared with gender of participants, two tests showed significant differences between male and female participants: Colds and Allergies and Diagnostics. When examination results were compared by age groups, there was a significant difference in only one test: Colds and Allergies. A similar result was found when results of posttests were examined using a nonparametric analysis of variance test and dividing the group based on years of experience. Colds and Allergies was the test showing significant differences. No differences were noted on other modules when data were analyzed on the basis of pharmacists employment status.

It would appear that the Cold and Allergies module examinations need to be re-evaluated for appropriateness. While this is a first avenue of study, it will later be shown that this module received lower evaluations than others and also did not have a video tape component to it.

Finally, because no specific criterion was established as a passing grade for posttests for participants of the pilot project, participants may not have taken the posttest situation seriously, or may not have been fully prepared for the examinations. While the faculty informally established a score of 70% as the minimum acceptable passing score and all retested individuals passed the examinations, a formal 70% criterion will be established for all future examinations.

Workshop Performance Data Skills acquired at workshops were assessed with performance checklists. Mastery at the 100% level was set as the criterion for the performance of all psychomotor skills. Because individuals were free to practice as much as they needed, workshop performance data were not analyzed . Individuals did not appear to have difficulty in attaining mastery of skills during workshops, although there was significant individual variation in the length of time necessary to complete each skill, and in the number of practice attempts before mastery. In some instances skills were reassessed at subsequent workshops. Participants continued to perform at the 100% level which suggested, perhaps, that the skills had been incorporated into practice or they were reviewing these techniques.

Although the participants demonstrated mastery of the techniques at the workshops, the faculty indicated a desire to formalize evaluation of these skills to a greater extent in future offerings and to confirm continued competence in these skills at the end of the program. This also will be an area of further attention and focus for the certification procedure for the accrediting organization. Do participants need to demonstrate incorporation of all these skills in their practice? Should everyone's practice be the same?

Evaluation of Instruction Participants were asked to evaluate both the home study and workshop portions of instruction. This was

accomplished for each module on two different forms: one form evaluated the home study; the second form evaluated the workshop. A seven point scale was used after completion of the first module on the recommendation of an outside consultant. For the opening workshop and the first module a five point scale was used so participants could rate the various components of the program and instruction. On the seven point scale, 1= Strongly Disagree, 4 = Undecided, and 7 = Strongly Agree. On the five point scale, 1 = Strongly Disagree, 3 = Undecided, and 5 = Strongly Agree.

The introductory workshop used 30 items to evaluate instructional methods, content, materials, participant benefits, setting and administration. The scores reflected an overall very positive feeling toward the program at the end of the opening workshop. A mean rating of 3.8/5.0 for the materials for the opening workshop was considered low and may reflect the lack of distribution of preworkshop materials. The overall composite scores of greater than 4.0 for the majority of categories was a good sign. The module evaluation scores for the home study and the workshops were high (greater than 6.0/7.0 or 4.5/5.0) with a few exceptions (Appendix A, Table 4). The overall mean evaluation score for a module was not less than 5.0/7.0 indicating participants were generally satisfied with all of the instruction provided. Although further analysis of these results was undertaken, it was understood that the comparisons made were among degrees of satisfaction, and not between the dichotomy of satisfaction and dissatisfaction. A subsection score of 4.7/7.0 was received for the dermatitis portion of the Dermatology module (Acne- the other half of the Dermatology module received a score of 6.2/7.0). This may reflect participants wishes for videotapes on this portion of the module because none was provided, only readings. (Since completion of the program we have used other resources to develop a more complete program on dermatology including not less than four hours of video tape which will be incorporated in the next program offering.)

The evaluations of the homestudy instruction in Colds and Allergies module, Dermatitis module, and suggestions from the verbal comments of participants on the Diagnostics module which indicated a strong preference for a more extensive video component, suggested the need of a videocomponent to each module. Modules only presented in print format (Colds and Allergies, the dermatitis portion of the Dermatology module, and the short one hour video for Diagnostics) received lower scores than other modules with significant video components. Evaluation scores for all other modules were greater than 5.0/7.0 (Range 5.6 - 6.2/7.0).

It appeared that adjusments were needed in portions of three modules mentioned above. These adjustments have been made and will be tried on the next group of participants. The module on Diagnostics has been updated twice since the first offering because of rapid developments in this content area. New diagnostic kits and revisions of materials seem to occur at almost monthly intervals. Fortunately, most companies have been willing to share samples of new products for inclusion into homestudy or workshop portions of the program. Also

important on this perspective is the ongoing committed time of faculty members to the maintenance of these materials. The departure of Dr. Suveges and the development of Ms. Wastl permits us to have the committed staff in addition to Popovich and Blank to update the different areas.

Workshop Evaluations All workshops received positive evaluations. All subsections of workshop instruction (Methods, Content, Materials, Benefits, Setting) received scores of greater than 6.0/7.0. Comparison of workshop evaluation scores showed no significant differences among the modules. Within some evaluations per module there were significant differences. However, the differences appear to be related to one element being evaluated particularly high rather than any area rated lower than the others. The exact meaning of this is open to question because mean scores for the workshops were all significantly above 6.0/7.0. The participants were satisfied with the workshops.

Additional analyses showed that subgroups of participants did not rate the workshops differently. Subgroup ratings examined were based on gender, age, practice status, and workshop location.

Midcourse Evaluations An overall evaluation was requested after four modules had been completed to determine suggestions for improvement, overall satisfaction level and difficulties encountered in the content and conduct of the program. The scores at that point were very positive (overall score - 6.8/7.0). Subsection scores ranged from 6.2 to 6.5. The deficiencies in Cold and Allergies module were corroborated as previously discussed. At this point there was not a significant comment about the lack of videotapes for Colds and Allergies, but participants did mention that the videotapes were a valuable part of the instructional methodology. When the scores on the questionnaire were determined it showed that the only significant difference among pharmacists was a lower rating on "Methods" subsection. This may reflect some difficulty of older pharmacists with the newer active forms of communication/interaction in homestudy compared to the traditional lecture format of education. More data need to be collected to substantiate this finding. These comments were repeated again after the Dermatology workshop when dermatitis had no videotape associated with it.

Several participants noted at this point that the pace of the course could be a little more rapid. It was suggested that the module workshops be only one month apart. In conjunction with this, participants suggested a minimum of supplementary reading assignments with the home study materials. (In some modules we supplied reprints of several articles from contemporary literature.) Participants were extremely positive in their comments about workshops. Some felt that the workshoops were the best aspect of the program. Most individuals indicated that the hands-on activities at the workshops complemented the home study information and helped them to learn and retain more information. Participants also enjoyed the opportunities for interaction with other pharmacists and faculty.

End of Program Evaluations The final evaluations for the program were similar to the midcourse evaluations. Participants noted there were improvements and adjustments as the program proceeded. The scores on the final questionnaire were very high (Appendix A, Table 5). Participants also suggested other content areas for inclusion. The most frequently mentioned were contact lens care and eye conditions, first aid principles and product recommendations. These recommendations have been considered and additional modules have been planned for the program. The participants were enthusiastic in their evaluations and compliments. They believed they had a good educational experience.

Faculty Comments Debriefing notes and comments were collected by faculty after each workshop. Three aspects were identified: 1) problems and concerns with instructional development, 2) feedback about workshop activities, and 3) personal feelings about involvement in the program. As noted before some difficulty was experienced with development of the modules according to an original schedule. Much of this was related to faculty workload and developing productions. Although some alterations in module timing occurred, the delays never were more than the six weeks between workshops. Also raised were concerns about the consistency of modules (similar difficulty). This was consistent with participant reports of time spent studying the materials. These suggestions have been since addressed with alterations in the modules. Comments about the workshops related specifically to sequencing issues within a particular workshop. These were addressed usually at the next scheduled workshop. The faculty also enjoyed the workshops and the interactions with participants.

The faculty has been sufficiently impressed with the success of this initial effort that the Department of Pharmacy Practice has committed faculty time to the ongoing development and offering of the Self Care Certificate program and has committed additional resources to the development of certificate programs for consultant pharmacists and for hospital staff pharmacists interested in staff/ personal development in the area of drug therapy monitoring.

F. SUMMARY AND CONCLUSIONS

The proposed model for certificate program formulation (Knowledge, Skills, and Application) was successful in this pilot project for A Self Care Certificate Program for Pharmacy Practice. Pharmacists demonstrated an increase in knowledge to an acceptable level. The pharmacists attitudes toward the learning techniques of independent study by print and videotape were very positive. The pharmacists suggested that videotapes be included in all modules. As a group the participants made recommendaitons for adjustments to all modules. Most of the adjustments were so minor that they will cause no identifiable change in the module. Three modules will receive significant changes as a result of their recommendations. The primary changes will be the inclusion of videotapes about the content area and fewer supplemental readings. Examinations for the modules will be reviewed to determine appropriateness. Module study time will be shortened to one month based on pharmacists' recommendations. Workshop activities will continue to emphasize hands-on activities.

Because the sample size was small in this pilot project, additional offerings of this certificate program will be needed to substantiate the very positive results with the pilot project participants. In addition, ongoing monitoring of participants' incorporation of these principles of self care consulting will be helpful in determining the lasting impact of this program on the individual practices. This will also serve to expand the research data on certificate programs in pharmacy practice.

Communications with some other schools of pharmacy has resulted in requests for use of developed materials from our certificate programs in their state. This necessitates the development of some instructor guidance materials for suggested use techniques of these materials. This is under development currently. In a similar way we have entered discussions with the American Pharmaceutical Association for the development of a multistate, multicenter study using these materials and the development of certificate programs in these states and certification procedures through the appropriate association.

Development of this project would not have been possible in a timely fashion without the money from the Fund for the Improvement of Post Secondary Education. The funds and the cooperation from the FIPSE staff and our project officer, J. Donohue, facilitated our completion with few snags. The results have prompted additional development.

APPENDIX A

Table 1
Description of Individual Demographic Variables

Variable	n	%	Mean (SD)
Gender			
Male	16	64	
Female	9	36	
Age	25		38.2 (8.9)
20-29	4	16	
30-39	11	44	
40-49	7	28	
50 or older	3	12	
Year of graduation	25		1972 (median)
1959 or earlier	3	12	
1960-69	7	28	
1970-79	10	40	
1980 or later	5	20	
Years in practice	25		14.4 (8.6)
less than 10	8	32	
10-19	11	44	
20 or more	6	24	

Table 2
Practice and Professional Demographic Information

Variable	n	%	Mean (S.D.)
Practice setting			
Community pharmacy	18	72	
Chain	6		
Independent	12		
Institutional	5	20	
Hospital	2		
Longterm care	3		
Other	2	8	
Position			
Staff (employee)	11	44	
Manager	4	16	
Owner	8	32	
Other	2	8	
Time in daily practice activities			
Drug distribution			50.2
0 %	1	4	(24.2)
1-25	4	16	
26-50	7	28	
51-75	10	40	
76-99	3	12	
100	0	0	
Patient-oriented			24.9
0 %	1	4	(16.6)
1-25	16	64	
26-50	6	24	
51-75	2	8	
76-99	0	0	
100	0	0	
Management			
0 %	3	12	24.7
1-25	13	52	(25.4)
26-50	5	20	
51-75	3	12	
76-99	0	0	
100	1	4	

Table 3
Environments Where Independent Study Occurred

	Location [number of individuals (%)]			
Module*	Home	Work	Home & work	Other
Colds (n=24)	17 (68)	0	6 (24)	1 (4)
Diabetes (n=24)	21 (84)	0	3 (12)	0
Diagnostics (n=25)	25 (100)	0	0	0
Acne (n=22)	20 (80)	0	2 (8)	0
Dermatitis (n=23)	20 (80)	0	3 (12)	0

* Information not requested for the Respiratory module.

Table 4
Module Evaluation Scores[a]

Module		Home Study	Workshop
Respiratory[b]			
	Mean	4.2	6.3
	S.D.	(.37)	(.55)
	Range[c]	3.5-5.0	5.1-7.0
Colds			
	Mean	5.8	6.2
	S.D.	(.54)	(.58)
	Range	4.6-6.6	4.9-7.0
Diabetes			
	Mean	6.1	6.5
	S.D.	(.56)	(.48)
	Range	4.9-7.0	5.4-7.0
Diagnostics			
	Mean	5.2	6.4[d]
	S.D.	(1.34)	(.43)
	Range	1.8-7.0	5.5-7.0
Dermatology			
Acne			
	Mean	6.2	
	S.D.	(.57)	
	Range	5.0-7.0	
Dermatitis			
	Mean	4.7	6.3[e]
	S.D.	(1.14)	(.52)
	Range	1.3-6.7	5.5-7.0

[a] Scale: 1 = Strongly Disagree, 7 = Strongly Agree
[b] Scale: 1 = Strongly Disagree, 5 = Strongly Agree
[c] Range: refers to the range of mean scores for each evaluation
[d] n=24
[e] n=23

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Table 5

FINAL EVALUATION FORM

SELF CARE CERTIFICATE PROGRAM — PURDUE UNIVERSITY

INSTRUCTIONS: To assist in the evaluation and ongoing development of this program, please circle the numeral that best reflects the extent of your agreement with each statement. Written comments may be continued on the back of this form. Thank you.

Mean (Standard Deviation)	Strongly Disagree			Neutral			Strongly Agree
1. I am comfortable with how the instruction is provided for home study..... 6.1 (.42)	1	2	3	4	5	6	7
2. I am comfortable with how the instruction is provided at workshops..... 6.3 (.58)	1	2	3	4	5	6	7
3. The course content is appropriate for this program..... 6.1 (.42)	1	2	3	4	5	6	7
4. The course content is interesting to me..... 6.6 (.51)	1	2	3	4	5	6	7
5. My personal learning objectives for the course have been met..... 6.4 (.61)	1	2	3	4	5	6	7
6. I have gained new insights relevant to my practice..... 6.6 (.50)	1	2	3	4	5	6	7
7. The pace of the course is appropriate..... 5.6 (1.38)	1	2	3	4	5	6	7
8. The course is well administered..... 6.1 (.58)	1	2	3	4	5	6	7
9. Overall, participation in the course has been worthwhile for me..... 6.7 (.46)	1	2	3	4	5	6	7
10. There are disturbing differences in consistency between modules..... 2.6 (1.72)	1	2	3	4	5	6	7
11. The staff was receptive to solving problems with course materials..... 6.7 (.49)	1	2	3	4	5	6	7
12. The staff was receptive to solving problems with scheduling conflicts..... 6.7 (.46)	1	2	3	4	5	6	7

13. Which module required the most time to prepare? number (%)

a. Respiratory Conditions 2 (8)
b. Diabetes Mellitus 8 (32)
c. Diagnostic Kits 1 (4)
d. Dermatology 3 (12)
e. Nutrition/Weight Control 2 (8)
f. Gastrointestinal Conditions 2 (8)
g. Hypertension 0 (0)

14. Overall, the workshop lengths were appropriate. 25 (100)

a. Yes 25 (100)
b. No

If no, an appropriate length is _____.

15. The optimum time between workshops is?

a. 3 weeks 5
b. 4 weeks 4 7 Median = 4 weeks
c. 5 weeks
d. 6 weeks 2

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APPENDIX B COMMENTS FOR FIPSE STAFF

The materials supplied with this report include one set of video tapes developed for this project, but do not include copies of video tapes developed by other sources or under current development for replacement or supplementation of current module resources. Printed materials were submitted with the interim report at the end of the first year of the project.

The overall cooperation of FIPSE staff is excellent. Communications with project officer were always congenial and helpful. Reaching the project officer was at times very difficult. There is uncertainty whether the difficulty in connecting with the officer at times was because of busy schedules or because reception staff did not forward messages and/or were not apprised of the schedule of the officers being contacted. Being informed that the project officer was not in for the day after talking with him less than an hour before at his office raises questions. Being told repeatedly "the officer was coming in later in the day" more than once on the same day only to find out that he was away at a meeting or on vacation for several days raises suspicions.

The first and second meetings held by FIPSE in Washington were of some use. There were few projects of a similar nature which made profitable interactions with other investigators difficult or impossible. There was little emphasis on evaluation at the meetings. While we understand that an effective evaluation strategy is an important feature of every acceptable proposal, we were astonished at the lack of emphasis on adequate evaluation procedures. FIPSE did provide a couple excellent consultants at the meetings who were willing to share information about evaluation strategies, but the time available to talk with these consultants was significantly less than the expressed need by alarge number of meeting participants.

No recommendations can be made in this research area except to **fund more continuing education projects for practicing professionals** which are not campus bound and which facilitate individual development along nontraditional pathways.

One area for improvement which would facilitate interactions and understanding **is proposal judgement communications.** While we were successful in our initial proposal, a subsequent proposal for a dissemination grant was not approved. We never received an official notice of rejection until more than 60 days after the notice deadline and we made the telephone calls to determine the status of the proposal. At that time we were told the project was not selected and the only reason communicated was that it was "more of the same". We also were told we could request written comments. We did request them in writing. We have never received those comments. The verbal comments did not make sense. Our project officer also did not

understand the communications. We are grateful for the initial grant and we achieved our objectives. However, the lack of response will not help us improve and be more productive.

The emerging directions in this area are proliferation of certificate programs. Theoretical frameworks need to be developed and tested to substantiate sound educational development. National guidelines for development of certificate programs and recognition of providers is occurring at this time. Professional credentialling in areas of subspecialties would seem to be a growing need based on the rapid technological growth and increasing rate of new knowledge production. In the health care professions, engineering, and the applied sciences, certifications will be increasingly important as retooling becomes a constant in professional careers. It is unreasonable to expect active productive professionals to return to resident status at the university to continue their development. With computers and developing video technology, facilitation of ongoing personal and staff development will foster professional growth. In addition, the on campus undergraduate professional curricula will benefit from the interactions and insights of working with postgraduate practicing professionals. Nontraditional education opportunities facilitated by grant opportunities will help shorten the gap which exists between academic adoption of applications of developemnts and developments within professional areas.